

Reconsideration of the application in view of the following amendments and remarks is respectfully requested.

### **REMARKS**

#### **Drawing Objection**

A revised Figure 2 changing tool controller to process controller is included herewith.

#### **35 U.S.C. § 112 Rejections**

Claims 2, 6, 31, and 36 stand rejected under 35 U.S.C. § 112 as being indefinite. Claims 1 and 28 include the feature of "initializing the control model in response to receiving the tool event notification." Claims 2, 6, 31, and 36 include the feature (*i.e.*, extracted from claim 2) of "initializing the control model based on the estimated control variable value." The Examiner asks whether the control model is initialized based on the control variable value or responsive to the tool event notification. It is Applicant's position that these two features are not mutually exclusive. If claim 2 were to be expressed in independent form, the element would read "initializing the control model based on the estimated control variable value in response to receiving the tool event notification." There is no conflict between these features. Claim 2 specifies how the control model may be initialized, and the language from claim 1 specifies when. Accordingly, Applicant respectfully requests the rejection of claims 2, 6, 31, and 36 be withdrawn.

**35 U.S.C. § 103(a) Rejections**

Claims 1, 2, 6, 11, 17, 22, and 28-31 stand rejected under 35 U.S.C. § 103(a) as being obvious over United States Patent No. 5546312 (Mozmunder) in view of U.S. Pub. No. 2002/0116083 (Schulze). Claims 35 and 36 stand rejected under 35 U.S.C. § 103(a) as being obvious over Mozmunder and Schulze in further view of U.S. Pub. No. 2002/0147960 (Jevtic). Claims 3-5, 7-10, 12-16, 18-21, 23-27, 32-34, and 37-45 stand rejected as being obvious over Mozmunder and Schulze, or alternatively, over Mozmunder and Schulze in view of Jevtic and the article by Michael Quirk.

Schulze is a provisional reference under 35 U.S.C. § 102(e) as its publication date is after that of Applicant's filing date, and as it has not matured into a patent. The objections raised by the Office Action should be referred to as provisional rejections, and are treated as such.

Independent claims 1, 17, and 28, include the general feature of initializing a control model employed by a process controller for controlling a process tool in response to receiving a tool event notification. Claim 17 includes the additional feature of performing a qualification procedure responsive to the tool event notification for determining a control variable for initializing the control model.

The Office Action asserts that the combination of Mozmunder and Schulze teach these features. Mozmunder discloses tuning a control model, but not as a result of a tool event notification. Mozmunder tunes the control models responsive to SPC tests indicating a significant difference between the model predictions and the observed results (col. 9, ll. 48-67). Mozmunder waits until after a deviation is identified by using post process metrology data. Applicant, in contradistinction thereto, proactively initializes the control model in response to the tool event notification, rather than waiting until a non-conforming condition is identified.

Mozmunder does not tune the models after a tool maintenance event (e.g., a tool event notification), but rather waits until the model mismatch is identified. Mozmunder states that tuning may result after a tool maintenance event or tool drift (col. 9, ll. 25-28), but this tuning only results from the resulting drift, not the tool maintenance event. Initializing the control model in response to the tool event notification, as set forth in claims 1, 17, and 28, has the added advantage of adjusting the model before a drift condition results, thereby increasing the quality of the items processed between the tool event and the drift identified by Mozmunder.

Schulze fails to correct this defect. The state model employed by Schulze is not a "control model to control an operating recipe of the tool." The state model only reflects the availability of the tool and is not used to control the operating recipe. "For example, the hierarchy of potential states may include six top-level states (Unscheduled Downtime, Scheduled Downtime, Engineering Time, Standby Time, Productive Time, and Non-Scheduled Time)" (paragraph 0055). Trigger events are only used to cause transitions between various productive and standby states, and as such have nothing to do with controlling the operating recipe of the tool.

Jevtic and Quirk also fail to correct the defects identified above. Because the cited art fails to teach or suggest initializing a control model employed by a process controller for controlling a process tool in response to receiving a tool event notification, claims 1, 17, 28, and all claims depending therefrom, are allowable. Applicants respectfully request the rejection of these claims be withdrawn.

In view of the remarks set forth herein, the application is believed to be in condition for allowance and notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the examiner is requested to contact the

undersigned attorney with any questions, comments or suggestions relating to the referenced patent application.

The Examiner is invited to contact the undersigned attorney at (608) 833-0748 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



Scott F. Diring  
Reg. No. 35,119

Attorney for Applicants

WILLIAMS, MORGAN & AMERSON  
CUSTOMER NUMBER: 23720

10333 Richmond Dr., Suite 1100  
Houston, Texas 77042  
(713) 934-7000

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